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MODULE IV - LEWISITE NEUTRALIZATION UNIT

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IV.A. APPLICABILITY

IV.A.1. The Conditions of this module apply to operation of the Lewisite Neutralization System at CAMDS (LNSC) as presented to the Executive Secretary in the Research, Development and Demonstration (RD&D) permit application, last revised in May 1997.

IV.B. LEWISITE NEUTRALIZATION SYSTEM AT CAMDS (LNSC) IDENTIFICATION

The Lewisite Neutralization System (LNSC) shall consist of a treatment tank, process mixers, a catalytic reactor, heat exchangers, exhaust gas filters, a stack flare, liquid knockout vessel, and storage tanks.

IV.C. WASTE CODE LISTINGS

IV.C.1. The Permittee may store or treat chemical warfare agent L, (P999), D001, D002, D004, D005, D006, D007, D008, D009, D010, D011, and F999, as defined in R315-2-10(d), waste codes in the tanks identified in Condition III.B.

IV.C.2. The Permittee shall be prohibited from treating or storing in the Lewisite Neutralization System (LNSC) any waste not identified in Condition IV.C.1.

IV.D. WASTE MANAGEMENT

The Permittee shall comply with the requirements of the Waste Analysis Plan, Attachment 2.

IV.E. SYSTEM DESIGN AND CONSTRUCTION CERTIFICATION

IV.E.1. The construction of the Lewisite Neutralization System (LNSC) shall be certified by an independent registered professional engineer in accordance with R315-8, prior to being placed into service.

IV.E.2. Any changes made to the Lewisite Neutralization System (LNSC) after acceptance by the Executive Secretary of the construction certification specified in IV.E.1., shall be made in accordance with the permit modification procedures specified in R315-3-15 and R315-3-17.

IV.E.3. The Permittee shall only modify the Lewisite Neutralization System (LNSC) in accordance with R315-3-15 and R315-3-17.

IV.F. MODIFICATIONS

IV.F.1. The physical configuration of the Lewisite Neutralization System (LNSC) shall be modified in accordance with R315-3-15 and R315-3-17.

IV.F.2. New tank systems shall be added to the Lewisite Neutralization System (LNSC) in accordance with permit modification requirements found in R315-3-15 and R315-3-17.

IV.G. LEWISITE NEUTRALIZATION SYSTEM (LNSC) DESCRIPTIONS

IV.G.1. The Lewisite Neutralization System (LNSC) shall be configured as shown in Drawings SK-BB-16, SK90-005, and D-96116-M-001 (Rev.O), dated 12/20/96 found in Attachment 1, System Design.

IV.G.2. The Lewisite Neutralization System (LNSC) components shall be constructed in accordance with the design drawings and specifications found in Attachment 1, System Design.

IV.H. TEST PLAN

IV.H.1. The Lewisite Neutralization System (LNSC) shall be operated as specified in the LNSC test plan and related SOP-s.

IV.H.2. The Permittee shall operate the Lewisite Neutralization System (LNSC) in accordance with the LNSC research and development test plan. Changes in the approved test plan shall be in accordance with Condition IV.H.3.

IV.H.3. The Permittee shall submit a new Lewisite Neutralization System (LNSC) research and development test plan and notify the Executive Secretary in writing in accordance with R315-3-15 when the research and development test plan changes operating parameters prior to operating the Lewisite Neutralization System (LNSC).

IV.I. LEWISITE NEUTRALIZATION SYSTEM (LNSC) OPERATING REQUIREMENTS

IV.I.1. The Permittee shall not place hazardous wastes or treatment reagents in the Lewisite Neutralization System (LNSC) if they could cause the LNSC, its ancillary equipment, or a containment system to rupture, leak, corrode, or otherwise fail.

IV.I.2. The Permittee shall protect the Lewisite Neutralization System (LNSC) from accelerated corrosion.

IV.I.3. The Permittee shall maintain secondary containment for the maximum volume of liquid which will be in the system as each batch of Lewisite is treated in the Lewisite Neutralization System (LNSC).

IV.I.4. The Lewisite Neutralization System (LNSC) may treat up to a maximum weight of 950 pounds of Lewisite per batch.

IV.I.5. Step I Operating Conditions

IV.I.5.a. The solution in the Decontamination Fluid Tank (T-140) shall be tested for NaOH concentration prior to introducing the solution into the Lewisite Neutralization System (LNSC).

IV.I.5.b. At no time shall the pH of the reaction solutions be allowed to rise above a pH of 9.

IV.I.5.c. The pH of the reaction solution shall be continuously recorded at least once per minute.

IV.I.5.d. The reaction solution temperature shall not exceed 195°F.

IV.I.5.e. The temperature of the reaction solution shall be continuously recorded.

IV.I.6. Step II Operating Conditions

IV.I.6.a. The reaction solutions shall not exceed a temperature of 195°F throughout this Step.

IV.I.6.b. The reaction solutions shall not have a pH greater than 9 throughout this Step.

IV.I.6.c. The reaction solutions shall not have a pH less than 4 throughout this Step.

IV.I.6.d. A sample will be taken manually from the Step II process. The sample will be analyzed for hydrogen peroxide (H_2O_2).

IV.I.6.e. The reaction solutions shall continue to be processed in Step II until the hydrogen peroxide (H_2O_2) concentration is 0.1% or less.

IV.I.7 Step III Operating Conditions

IV.I.7.a. The pH of the reaction solution shall be raised to a maximum pH of 13 in nominal 0.5 pH unit, or less, increments, by the addition of an 18% sodium hydroxide (NaOH) solution. This incremental process shall not be completed in less than one hour.

IV.I.7.b. The temperature of the reaction solution shall not exceed 195°F throughout Step III.

IV.I.7.c. Treatment in Step III will continue until the Lewisite-oxide concentration in the resulting solution is at or below 1 ppm.

IV.I.7.d. A sample shall be taken manually from the Step III process. The sample will be analyzed for Lewisite oxide.

IV.I.8. Upon completion of this treatment process, the batch of reaction solution shall be transferred to the Neutralized Product Storage Tank (T-130).

IV.I.9 The Lewisite Neutralization System (LNSC) will be continuously monitored and recorded by the CAMDS Facility while processing a batch of Lewisite.

IV.I.10. The monitoring data shall be recorded in the operating record for the Lewisite Neutralization System (LNSC).

IV.I.11. The Permittee shall continuously monitor the Auxiliary Treatment Facility (ATF) for Lewisite agent when Lewisite is being treated in the ATF.

IV.I.12. The Permittee shall not transport the treated waste offsite until the Permittee has demonstrated by approved analytical method(s) that the waste has been treated to a concentration of 1 ppm L or less.

IV.I.13. The operating parameters, as specified in Attachment 1, shall be maintained according to the limits specified.

IV.I.13.a. Operation outside the specified ranges shall result in a stop feed of L into the Lewisite Neutralization System (LNSC).

IV.I.13.b. Temperature within the Reactor Vessel (PV-110) shall not exceed 195°F.

IV.I.14. Catalytic Reactor Vessel (PV-120) shall be a treatment unit.

IV.I.14.a. The pH of the reaction solution within the Catalytic Reactor Vessel (PV-120) shall not be less than 4 pH units.

IV.I.15. Agent contaminated Carbon filter media shall be stored by the Permittee in a permitted hazardous waste storage area until a carbon filter management plan has been developed by the Army and approved by the Executive Secretary.

IV.I.16 Step I of the LNSC process shall not commence and the Permittee shall not add wastes to the process unless the process flare is lit and operational.

IV.J. MONITORING REQUIREMENTS

IV.J.1. The Auxiliary Test Facility (ATF) ventilation filter system shall be maintained as described in Attachment 8 of the LNSC permit application.

IV.J.2. One filter unit shall be on line at all times from the time that Lewisite has been introduced into the Lewisite Neutralization System (LNSC) until the Auxiliary Test Facility (ATF) has been thoroughly decontaminated and agent is no longer detected at one TWA or greater of Lewisite in the ATF.

IV.J.3. A second filter unit shall be maintained as a backup unit.

IV.J.4. If a back-up filter is unavailable or inoperable, the Lewisite Neutralization System (LNSC) shall be placed into shut-down process. No additional waste may be fed into the system until at least one filter unit and back-up unit are returned to good working order.

IV.J.5. Operation of the air filtration system shall be monitored.

IV.J.5.a. A real time monitor shall be located after the first bank of carbon and shall monitor for agent L.

IV.J.5.b If chemical agent is detected in the exhaust stack of the filter unit, the backup filter unit shall be immediately placed into service and the primary filter shut down. The LNSC process may continue if another backup filter is available. If no additional backup filter is available , no additional Lewisite or other waste shall be placed into the LNSC until both a primary and backup filter system are available.

IV.J.5.c. When chemical agent breaks through a carbon filter bank the bank is determined to require replacement. The filter bank shall be replaced with new carbon and the bank certified for chemical agent operations prior to placing the filter unit back into service.

IV.J.5.d. Release of agent L in excess of 1.0 ASC from the air filtration system to the environment shall be considered a potential endangerment to human health and the environment.

IV.J.6. Perimeter monitoring

IV.J.6.a. Prior to operation of the LNSC, Monitoring Stations 1, 3, and 9 of the perimeter monitoring system shall be equipped with monitors (Lewisite bubblers) to sample for Lewisite. These monitors will remain throughout the Lewisite testing and closure of the LNSC.

IV.J.6.b. Results of the perimeter monitoring shall be kept in the Lewisite Neutralization System (LNSC) operating record.

IV.K. PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

The Permittee shall comply with R315-3-6.2 (40 CFR 270.16 incorporated by reference), and R315-8-2.8.

IV.L. PROVISIONS FOR INCOMPATIBLE WASTES

The Permittee shall comply with R315-3-6.2 (40 CFR 270.16 incorporated by reference), and R315-8-2.8.

IV.M. SPILL REQUIREMENTS

IV.M.1. The Permittee shall prevent spills from the Lewisite Neutralization System (LNSC) and from the Effluent Storage Tank (EF-1).

IV.M.1.a. Secondary containment for 1330 gallons shall be provided for the Lewisite Neutralization System (LNSC).

IV.M.1.b. The total volume of secondary containment must be maintained throughout the operation of the LNSC.

IV.M.1.c. Tank EF-1 shall have a separate secondary containment system with a capacity not less than 6,500 gallons.

IV.M.2. The Permittee shall respond to a leak from a secondary containment system according to the following conditions:

IV.M.2.a. The Permittee shall eliminate the source of the leak in accordance with Condition III.K. and R315-8-10 (40 CFR 264.196 incorporated by reference).

IV.M.2.b. Removal of waste from all hazardous waste Lewisite Neutralization units in Lewisite Neutralization System (LNSC) the secondary containment area.

IV.M.3. The secondary containment area shall not be returned to service until:

IV.M.3.a. The secondary containment has been repaired; and

IV.M.3.b. The repair certified by an independent, qualified, Utah registered professional engineer.

IV.M.4. The repair and certification shall be documented in the operating record.

IV.N. INSPECTION SCHEDULES

IV.N.1. The Permittee shall maintain at the Auxiliary Test Facility (ATF) the detailed Inspection Schedule for the Lewisite Neutralization System (LNSC).

IV.N.2. The Permittee shall inspect the Lewisite Neutralization System (LNSC) as specified in the Inspection Schedule.

IV.N.3. The Permittee shall keep a record of the inspections conducted for the items specified in the Inspection Schedule specified in Condition IV.N.1.

IV.N.4. The inspection record shall, at a minimum, record the date the inspection record was generated, the name of the inspector, the date and time of the inspection, and observations made during the inspection.

IV.N.5. The Permittee shall maintain a continuous listing of observations made by inspectors which required further action. The follow-up actions shall be documented.

IV.N.6. The inspection documents for the Lewisite Neutralization System (LNSC) shall be maintained at CAMDS for a minimum of three years from the date of the inspection report.

IV.O. CLOSURE

Closure, either full closure or partial closure, of the Lewisite Neutralization System (LNSC) shall be in accordance with Site Plan 91-01, Closure of the U.S. Army Chemical Agent Munitions Disposal Lewisite Test Processes and Condition II.L.

IV.O.1. Partial Closure

IV.O.1.a. Upon completion of the Lewisite Neutralization System testing, any permitted component associated with this testing may be partially closed.

IV.O.1.b. The Permittee shall accomplish Partial Closure in accordance with Condition II.L.

IV.O.2. Rinsing Procedure

IV.O.2.a. Each component shall be thoroughly rinsed with a minimum of three rinses.

IV.O.2.b. The first rinse shall be with an appropriate solvent.

IV.O.2.c. The last rinse shall be with water.

IV.O.2.d. The rinsate shall be either sampled and analyzed to determine it is not a hazardous waste; or shall be managed as a hazardous waste.

IV.O.2.e. A coupon shall be cut from each component to be tested for agent. Analysis shall be accomplished by extracting the agent from the metal with an appropriate solvent.

IV.O.3. A component which has been partially closed shall be added to the CAMDS Closure Plan, in accordance with R315-3-15 and R315-3-17.

IV.O.4. Upon approval of the partial closure, the component shall not be used for management of any other material without notification of the Executive Secretary, in accordance with R315-3-15 and R315-3-17.

IV.O.5. If partial closure cannot be accomplished, the component shall be closed in accordance with Condition II.L.

IV.O.6. Final Closure

IV.O.6.a. The Permittee shall comply with R315-8-10 (40 CFR 264.197 incorporated by reference).

IV.O.6.b. Closure of the system shall be in accordance with R315-8-10.

IV.O.6.c. Each component shall be managed as a hazardous waste.

IV.O.6.d. Each component shall be thoroughly decontaminated.

IV.O.6.e. Each component shall be removed from the facility.

IV.O.6.f. Each component shall be cut into manageable pieces.

IV.O.6.g. Each component shall be sent for disposal at a permitted hazardous waste landfill.

IV.O.6.h. Metal components may only be recycled or managed as scrap metal with prior approval by the Executive Secretary and with the permit modifications required in accordance with R315-3-15 and R315-3-17.